# United States
# Department of the Interior

U.S. Geological Survey

# Revised Final
# Annual Performance Plan
# for Fiscal Year 1999


**February 16, 1999**

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# Annual Performance Plan
# for Fiscal Year 1999

# U. S. Geological Survey
# Fiscal Year 1999 Revised Final Annual Performance Plan

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# Organization of the Annual Plan

The organization of the U.S. Geological Survey's (USGS) FY 1999 Annual Plan reflects the Department of the Interior's approach to improve and streamline the Annual Performance Plan and better link the plan with the Budget. The revised Annual Performance Plan presents the bureau's goals and measures, and identifies the FY 1999 strategies and resources needed to achieve them, consistent with the Strategic Plan and enacted appropriation.

By following this presentation framework, Interior will be able to not only meet the requirements of the Government Performance & Results Act but also promote managerial accountability through a direct connection of the Strategic Plan, resources, and outcomes. The Annual Plan links coherently with goals contained in the Strategic Plan. The Annual Plan sets forth in measurable and quantifiable form, the levels of performance for each goal in the budget year. The Annual Plan also links to the bureau's budget as enacted by Congress for FY 1999. This presentation provides a context by which to measure the Bureau's performance in accomplishing its mission.

## The Annual Performance Plan for FY 1999 is divided into four sections:

**Section I — *Introduction and Overview* states the bureau mission and addresses additional GPRA requirements.**

**Section II — *Mission-Related Goals* includes Annual Performance Plan summary and descriptive goal narrative covering FY 1998 and FY 1999 including operational processes, skills, technology, and the human capital, information and other resources necessary to achieve the goal.**

**Section III — Means Goals discusses bureau-specific corrective goals identified on the Office of the Inspector General's Ten Key Management Issues Report.**

**Section IV — *Performance Measures and Verification* provides a simple presentation of the bureau's methods to verify and validate the measured values of actual performance**.

An Appendix is also included to provide an index of common terms, a summary of funding by GPRA Program Activity, and documentation of the FY 1998 baseline data.

# I. Introduction and Overview

## I.1 Introduction

### Synopsis of Bureau Activities

The United States Geological Survey (USGS) provides science for a changing world by delivering reliable and impartial information that describes the Earth, its natural processes, and its natural species. This information is used by emergency response organizations, resource managers, planners, and other customers to minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; enhance and protect our quality of life; and contribute to wise economic and physical development. The USGS is at work in every State of the Nation and in dozens of foreign countries, cooperating with more than 2,000 organizations to provide information for resource managers in the public and private sectors. Our strengths include a multi-disciplinary workforce capable of working anywhere in the world; the ability to develop, design, and maintain long-term national and international databases; and the capability to conduct long-term, broad-scale, multi-disciplinary, and interpretive studies. Our strengths rely on our reputation for objectivity and scientific excellence, as well as a strong heritage of collegial relationships and partnerships with the customers we serve.

USGS science programs include the following:

- biological resources (information critical to biological species management, animal health, ecosystems, and invasive species);
- geologic (information relating to energy and mineral resources, natural hazards such as landslides, volcanoes, and earthquakes, and geologic processes that affect our Nation's land and coasts);
- national mapping (geospatial data, topographic maps, and satellite images); and
- water resources (real-time flood data and water quality and quantity information on surface and ground-water resources)

### Revision of Strategic and Annual Plans

The Department of the Interior, Office of Inspector General, Office of Management and Budget, General Accounting Office, and Congressional Institute "Report Cards" and discussions on the Department's first GPRA Strategic Plans, FY 1999 Annual Plans, and linkage to the FY 1999 budget have all emphasized the need to

- reduce the complexity and number of goals and measures;
- improve the clarity of performance information; and
- improve the linkage of funding to performance and strategy implementation.

John Berry, the Department's Assistant Secretary for Policy, Management and Budget, at a GPRA hearing before the House Resources Committee on April 22, 1998, expressed the Department's commitment to accountability and to measuring and reporting the successes achieved by the Department. The Department initiated analyses of performance data baseline and management systems across all Bureaus; piloted tracking of performance against the Bureaus FY 1999 annual plans; and established a Performance Management Council with representatives from all Departmental Bureaus, as well as their Planning and Policy, Budget, Human Resources, and Information Technology Offices to guide the process of revising, reformatting, and refocusing the Department's strategic and annual plans.

The USGS independently concluded that our September 1997 strategic plan needed to be reexamined in a scientific management context rather than a solely scientific context and needed a streamlined organizational approach to better communicate interrelationships and corporate responsibilities.

The USGS has gained considerable experience in the inherent advantages and disadvantages in communicating, budgeting, and implementing the current USGS strategic plan through the various phases of analyses and implementation over the past year. The September 1997 GPRA Strategic Plan and the more detailed discipline-centric plans developed over the past year were used as the basis for revision of the Strategic Plan described in this document, Section I.5.5. Revision of our strategic plan was designed to

- clarify our strategic direction;
- improve communication of who we are, what we do, and our value to the Nation;
- simplify communication and linkage of the strategic and annual plans with the budget to improve accountability; and
- improve alignment of the strategic plan with the Department's overview.

A revised Strategic Plan and preliminary FY 2000 plan were submitted to OMB in September 1998 and were subsequently used during OMB's review of the FY 2000 budget request. The positive reception of the new plans by the Department of the Interior and OMB has encouraged the USGS to use the new FY 2000 format and goals in revising the FY 1999 annual plan. Having systematically defined baselines during FY 1998 to establish the FY 2000 performance targets, this approach provides USGS the opportunity to immediately begin establishing performance trends in FY 1999, rather than tracking a suite of performance measures in FY 1999 that will be substantially changed in FY 2000.

## GPRA and Science

The problems inherent in measuring scientific performance have been discussed among Federal science organizations since passage of GPRA and are well recognized. In fact, P.L. 105-276, the Department of Veterans Affairs and Housing and Urban Development, and Independent Agencies Appropriations Act, 1999, which includes funding for the Office of Science and Technology

Policy (OSTP), gave the OSTP and OMB authority to fund a National Academy of Sciences study on methods to develop performance measures for federally funded research and development and to recommend how the measures "may be adapted for use by the federal government to evaluate federally-funded research and development."

The USGS' primary product is scientific information. Quantitative measures of our productivity are tangible and directly related to inputs, but they are primarily outputs (e.g., number of scientific papers published, data collected,...) that convey little sense of the true benefits gained by the American people from the information we produce. The outcome related to our providing scientific information is that a stakeholder has the information with which to make an informed decision (land manager's inputs). Quantitative impact measures (e.g., the acreage of ecosystems restored by a land manager) are only indirectly linked to USGS outcomes.

The results of research are not predetermined — by definition science is objective, impartial, and credible. But science is often not the only factor that is germane to the decision on management strategy. The scientific information we produce provides alternatives and predicts their outcome, but no matter how "good" the science may be, it in itself cannot achieve the desired outcome. It remains for the user of the scientific information who does or does not make a science-based decision to determine how useful the information was in making the decision, to measure the outcome achieved by the decision, and ultimately acknowledge the utility of the science in achieving the desired outcome.

**Scientific Framework for Decision Support Systems**

In cooperation with ESRI Inc., USGS recently completed a new decision support system designed to operate on the World Wide Web, and produced demonstrations of the product for examining resources in Alaska and for evaluating abandoned mine lands in Montana. The Alaska product has been released via CD-ROM and the Montana products are about to be released. These products were derived from an ongoing 5-year project to disseminate electronically the national and regional databases of geochemistry, geophysics, mineral and mine localities, and ethology, as well as extensive science applications developed using the data. These applications support policy and regulatory decisions and provide scientific background for land management, environmental assessment, and resource inventories.

For example, data layers describing existing wetlands, weathering properties of ore-bearing rocks, and location of mine tailings can be combined to help plan for relocation of tailings (mining residue) away from water sources. Rapid access to data meets the needs of our partners and customers, including BLM, USFS, NPS, and States, for real-time access to data in formats they can use for interactive analysis in support of planning, remediation, and the full spectrum of land use and management decisions.

If the science we provide is not used because it was not useful or timely, we can and should be held accountable. That is why our research will continue to be peer reviewed and our programs cyclically evaluated to ensure the quality of our science. That is also why we have revised the strategic and annual plans to focus on **provision** of that science to customers for solving the Nation's complex land and resource management problems and to minimize the loss of life and property from natural disasters. Therefore, **our vision, mission, and strategic direction**

- focus on responsiveness and service provided to our **customers**, underscoring the relevance and flexibility of science to meet customer needs, and

- are designed to convey a **corporate identity** that capitalizes on the combined expertise of our multiple scientific disciplines and that makes a commitment to pursuing a more integrated approach to both our monitoring and research functions for any hazards and natural-resource related issues.

**Balanced Scorecard Approach**

The USGS investigated tools to facilitate the process of revision of the strategic and annual plans and pursued a modified Balanced Scorecard approach (*The Balanced Scorecard*, Robert S. Kaplan and David P. Norton, 1996, Harvard Business School Press) which

- establishes common goals that must be implemented across the organizational structure;

- establishes opportunity for integration, synergy, and shared measures among scientific disciplines; and

- ensures that every measure is part of a chain of cause and effect linkages that measure movement of the organization in its strategic direction


After reconfirming our basic vision and mission, we developed a customer-focused strategic direction. Using the Balanced Scorecard approach, we simultaneously developed goals and performance measures for customers, programs, people, and operations. The customer goals both drive and provide feedback for the program goals. The operations and people goals (means-type goals) provide for the infrastructure and human resource skills needed to accomplish the program goals. The Program goals are the focus of the GPRA Strategic and Annual Plans, with customer goals referenced in the customer service standards section I.5.1, and people and operations goals discussed in the strategy sections II.1.2 and II.2 for each GPRA Program Activity.

The Balanced Scorecard's approach to strategy implementation captures cooperation and synergy among organizational units, staff, and support functions by the direct alignment of strategy throughout the organization. The unifying management principles ensure that

- The strategic plan is the unifying concept for the entire program and performance management process;
- Shared vision is the foundation for strategic learning;
- Goals are aligned with the strategic direction throughout the organization;
- Problem-solving is shared;
- Initiatives are aligned with the strategic plan; therefore, allocation of resources and use of infrastructure are justified within the context of the strategic plan;
- The annual budget is linked to the long-range strategic plan; and
- Strategy development continues.

## I.2 Mission Statement

### Strategic Direction

The USGS will combine and enhance our diverse programs, capabilities, and talents with increased customer involvement to strengthen our science leadership and contribution to the resolution of complex issues.

### Vision

The USGS is a world leader in the natural sciences through our scientific excellence and responsiveness to society's needs.

### Mission

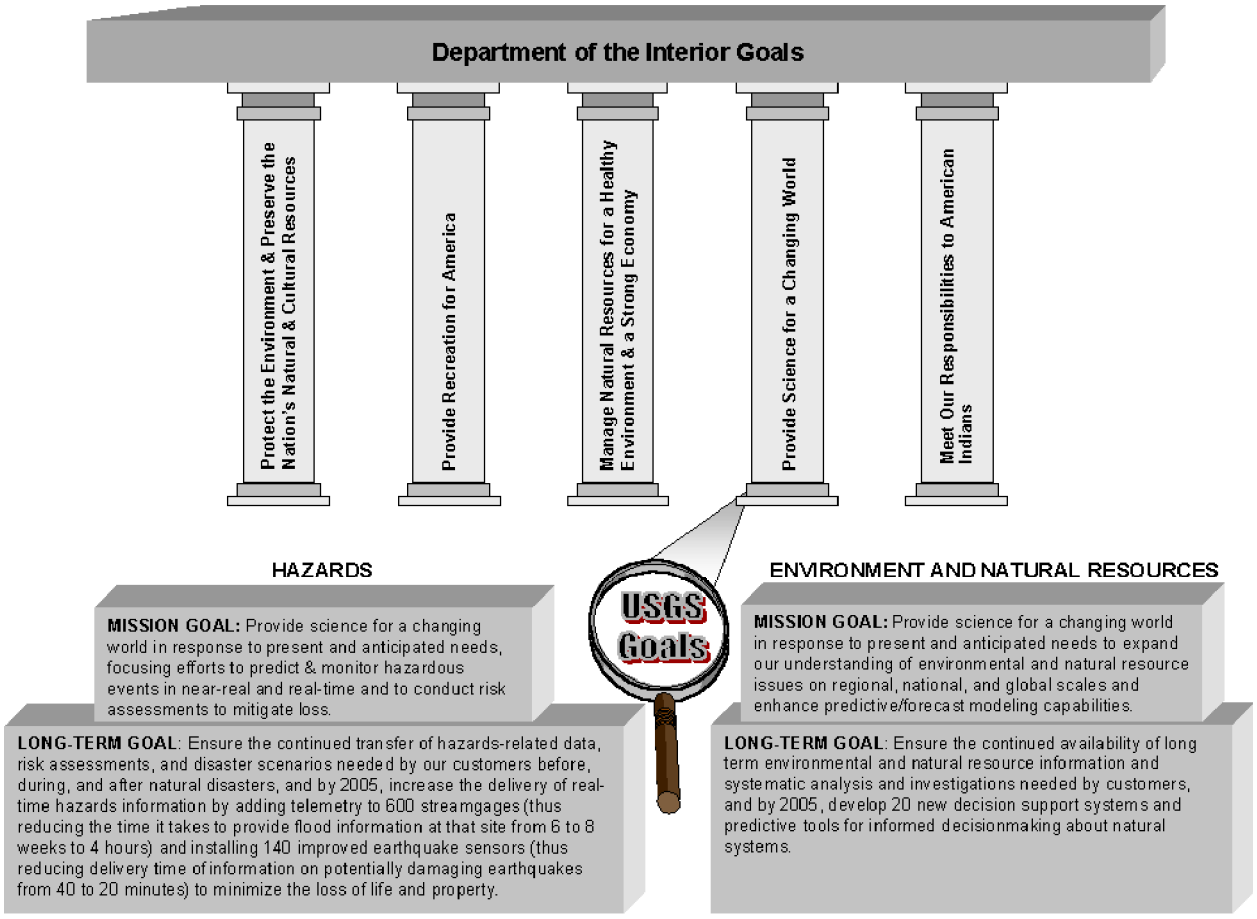
The USGS serves the Nation by providing reliable scientific information to:
- describe and understand the Earth;
- minimize loss of life and property from natural disasters;
- manage water, biological, energy and mineral resources; and
- enhance and protect our quality of life.

## I.3 Relationship to Departmental Goals

The U.S. Geological Survey has two GPRA Program Activities —

- Hazards, and
- Environment & Natural Resources.

Each Program Activity has a Mission Goal and an associated Long-term Goal. The Mission and Long-term Goals directly support the Department of the Interior Goal # 4, "Provide Science for a Changing World." As such, USGS science contributes to all of the Department of the Interior (DOI) goals by focusing on the provision of scientific information to support these efforts.




The USGS currently has several research support agreements targeting specific USGS programs which are providing science support for DOI resource management needs. USGS has recently developed a research support proposal with individual DOI bureaus to provide additional integrated science for ongoing resource management needs. A Department-wide process to

engage all resource management bureaus with the USGS in a formal, coordinated effort to identify research priorities is now being finalized to facilitate provision of sound and effective USGS science support for these bureaus and provision of bureau input to USGS for defining GPRA metrics and outcomes. The agreement now being signed by the bureaus defines the nature and level of science support and milestones for budget development and funding allocation. Because the budget process occurs over several fiscal years, the formal process will be fully implemented for the FY 2001 budget cycle; however, the consultation and support specified in the agreement will be effected, as applicable, within the FY 1999 and FY 2000 budget cycles as soon as the agreement is executed. The full process begins at the field level, with an assessment of the status of ongoing research to define current science support for DOI resource managers, relevance of that support to bureau priorities, identification of gaps, and the formulation of priority science to address the management needs. The regional recommendations are posted to each bureau's headquarters for prioritization at the bureau level. Bureau directors meet with the USGS director to share their research needs and identify research that has broader, cross-bureau application. A formal DOI science support proposal will emerge from the process and be supported by the Department as the proposal moves through the budget cycle. Upon enactment of an appropriation, bureaus will again be engaged to finalize plans given the available funding.

**Our goals and performance measures** clearly link to achievement of the Department's defined outcomes for their goal to "Provide science for a changing world," which are

- Resource managers make decisions based on accurate, reliable, and impartial scientific information.
- The loss of life and property from natural disasters is minimized through access and availability of timely scientific information.
- Federal, State, and local governments and the private sector have access to shared national databases of natural resources information.
- The public has easy access to Earth science information.

**Data Quantity and Accessibility Grow**
**— Digital Imagery —**

National coverage of digital ortho-imagery quadrangles (DOQs) grew to 48% in FY1998, up from 28% in FY1997. DOQs are digital images that combine the image characteristics of an aerial photograph with the geometric qualities of a map. Images are detailed enough to distinguish buildings and cars, but not people. During the 1998 forest fire emergency in Florida, DOQs provided up-to-date map information for firefighters. DOQs are also used in Florida and elsewhere to update geospatial data relating to land use, hydrography, and transportation.

Now with a few computer mouse clicks, scientists, planners, consumers, and school children around the world can view and download these high resolution USGS aerial images over the Internet at the Microsoft TerraServer website (http://www.terraserver.microsoft.com).The initial response to the TerraServer has been spectacular. Early statistics show the average number of hits at 12 million per day with a peak of almost 29 million hits on July 1. TerraServer is a mutually beneficial research effort in which the Federal government and private industry have come together to provide general public access to USGS geospatial data while allowing Microsoft and other project partners to promote their technological contributions. The USGS looks forward to future opportunities in which to partner with private sector entities to expand access to valuable data and information resources.

## I.4 Linkage to Strategic Plans and Budget

### USGS Goal Hierarchy and Linkage of Annual and Strategic Plans

The GPRA Program Activity concept is used to better relate goals to the existing budget structure, to present both budget and performance information in a more thematic way, and to enhance the plan's informative value. The two mission goals from the USGS revised Strategic Plan are used as the GPRA Program Activities in the Annual Performance Plan. Each mission goal or GPRA Program Activity has one associated long-term goal which identifies target levels and the time frame of performance for the Strategic Plan. Each of the Strategic Plan's long-term goals has one associated annual goal which identifies the annual performance increment necessary to achieve the long-term goal as well as any change proposed to result from program and budget initiatives. Each annual goal has five performance measures — a total of ten for the entire Annual Plan. "Stakeholder meetings" are identified as performance measures for each of the annual goals (01.01.01.05.99 and 02.01.01.05.99) to capture follow-through on the strategic direction's focus on "increased customer involvement to strengthen our science leadership and contribution to the resolution of complex issues."

### Linkage of Annual Plan and Budget

Although performance measures are focused on "completions," each long-term and annual goal begins by acknowledging the ongoing need to ensure continued maintenance and improvement of long term data collection networks and efforts required by our stakeholders; and both annual goals document associated infrastructure requirements in performance measure #1. These measures are included to ensure that each program activity in the Program & Financing (P&F) Schedule as well as every major program, function, or operation is reflected in the Annual Plan (*OMB Circular A-11, Part 2, § 220.8 [b]*).

The GPRA Program Activity concept captures the contribution of all program activities to a common mission requirement by applying a single set of annual goals and performance measures across four P&F schedules — National Mapping Program (08040001), Geologic Hazards, Resources and Processes (08040002), Water Resources Investigations (08040003), and Biological Research (08040004). The Survey's remaining two P&F schedules — General Administration (08040005) and Facilities (08040006) — support all programmatic activities and their funding has been distributed on a *prorata* basis to the two GPRA Program Activities (Hazards and Environment and Natural Resources).

Aggregate funding at the GPRA Program Activity level is shown in Section II, Mission-Related Goals, Part II.2 Exhibit A of this Annual Plan. Budget Activities and subactivities linked to these GPRA Program Activities are identified in Section II, Mission-Related Goals, Part II.1.3. Baseline performance targets for FY 1998 are documented in the appendix by program. These targets are aggregated as a total for the Bureau in **Exhibit A** for each GPRA Program Activity.

Long-term goals assume continued funding at the FY 1998 level. Annual performance targets for FY 1999 reflect the enacted funding level. Departures of FY 1999 targets from the FY 1998 baseline represent not only the aggregate impact of funding increases and decreases in the given year, but also the completion of long-term efforts from prior year funding increases or decreases, and/or cyclic studies mandated by Congress.

No budget account structure changes have been proposed at this time for the purpose of improving the presentation of GPRA performance information.

## I.5 Additional Annual Performance Plan Requirements

(*OMB Circular A-11, Part 2 §220.6*)

### I.5.1 Customer Service Standards

This section describes our plan to improve implementation of our mission by more efficiently and effectively serving the public, industry, State and local agencies, and other customers. Our 1997 customer service "Report to our Customers" is available online at

http://pubs.usgs.gov/customer/1997/

Consistent with a Balanced Scorecard approach, our "FY 1999 Customer Service Plan" directly supports our revised GPRA Strategic Plan and its continued refinement. The customer service plan is available online at

http://www.usgs.gov/customer/1999_customer_service/1999service.html

The U.S. Geological Survey recognizes that excellent customer service is a key component of good government and that our interface with customers reflects the effectiveness of our organization. Customer service and customer satisfaction measures have become a very important part of our business. As responsible stewards of taxpayer dollars, it makes good business sense to involve our customers in what we do and ensure that we are meeting their expectations with excellence.

We are also required by Executive Order 12862 and the recent Presidential Memorandum, "Conducting Conversations with

"All our management related to brucellosis-infected mammals is based on (USGS) information provided. We could not manage effectively without this information." U.S. Fish and Wildlife Service

"Your web version of stream flow data is nothing short of superb. By printing out a station's data daily in the week before a trip, an excellent picture of what is happening on the river is revealed to me...In short, thank you for providing a fantastic resource to the "river rats" of Virginia. True, we may look a little grizzled after a day or two on the water, but we appreciate good science with practical applications."

*USGS customers continue to express satisfaction with USGS scientific data such as stream-flow information. Even recreationists find these data helpful.*

America," to identify our customers and to survey them to determine the kind and quality of services they want and their level of satisfaction with existing services. The USGS is committed to engaging customers in a dialog to identify their needs and satisfaction levels, and to deliver our products, information and services to customers in a timely and accurate manner.

Because of our emphasis on engaging our customers, measuring satisfaction levels, and ensuring that we are meeting customer needs, the USGS has

- adopted a Bureau-level Customer Service Policy (http://www.usgs.gov/usgs-manual/500/500-15.html) to clearly and officially state our position on and support of customer service excellence, and

- initiated a 3-year information collection program involving voluntary customer surveys to ascertain customer satisfaction with the products, information and services of the USGS. The surveys will involve individuals who interact directly with the USGS to use or to request our products, information and/or services. Over the 3-year period, we will focus on encouraging and obtaining satisfaction feedback from customers involved in three areas of effort: partnerships and cooperative agreements, technical assistance, and public inquiries and requests for publications, information, services, maps, and/or other products.

**Water Science for Schools**

USGS's "Water Science For Schools" is a topic-based Outreach World Wide Web site aimed at students aged 9 to 90, who want to find out more about the many aspects of water. Topics include Water Basics, Earth's Water; and Special Topics such as Water Quality, Acid Rain, Water Use, and Water Data and Maps. The Web site also includes a Water Question-and-Answer section, a Picture Gallery; and an Interactive Activity Center where students can answer Challenge Questions, Opinion Surveys, and Questionnaires. Visit us at http://wwwga.usgs.gov/edu/

Consistent with our strategic direction, program performance targets are customer-

driven. As such, stakeholder meetings are identified as a crucial performance measure for both annual goals (01.01.01.05.99 and 02.01.01.05.99). Although we are constantly meeting with partners and stakeholders, the Program Managers have identified several significant meetings and program evaluations that are and will be crucial to the planning process, yielding tangible assessments that will improve direction and management of the programs as well as identifying USGS output/outcome needed by stakeholders. Program managers refine target estimates for program performance on the basis of these meetings.

**Customer Input/Stakeholder Meetings**
**National Cooperative Geologic Mapping Program**

Over 40 customers representing other Federal agencies, State agencies, libraries, universities, museums, business and industry, and professional societies participated in a USGS workshop in May 1998 on the National Geologic Map Database. These data users were given an opportunity to interact with the Internet-delivered prototype database http://ncgmp.usgs.gov/ngmdbproject/ Participants suggested numerous improvements to the interface, content, and project schedule, and offered ideas for future cooperation with their own sectors. A summary of plans for and progress toward implementing customer suggestions was provided to all participants in September 1998.

USGS held two geologic map user forums in the Mid-Atlantic Region and the Central Great Lakes Region to solicit customer input on improving geologic maps produced by the USGS. The Mid-Atlantic forum produced *USGS Circular 1148* which documents how customer input was used in program planning. In response to customer needs expressed in the Great Lakes Forum, a new coalition between the USGS and the geologic surveys of Ohio, Indiana, Illinois, and Michigan was formed to map glacial sediments which contain critical ground water aquifers

### I.5.2 Use of Non-Federal Parties in Preparing this Annual Plan

The Annual Plan was prepared in conformance with *OMB Circular A-11 § 220.7*. The USGS did not engage non-Federal parties in preparing the Annual Performance Plan.

### I.5.3 Crosscut Issues

**Everglades Restoration** — The Department is leading an effort to protect and restore the South Florida ecosystem. Restoration and protection require scientific information on the history of changes to the environment, scientific understanding of how the ecosystem operates, and an ability to forecast what will happen under different management scenarios. USGS has worked closely with its scientific and management partners through the South Florida Ecosystem Restoration Task Force and associated groups to identify scientific needs, coordinate activities, and deliver relevant science for decisionmaking. Highly accurate elevation data are needed in hydrologic models to determine the direction

**Determining Factor in Everglades Restoration Recommendations Across Trophic Level System Simulation**

Using a series of landscape models to predict the effect that changes in water level will have on the wildlife inhabiting the Everglades, the ATLSS program was developed to support the decision- making process by agencies responsible for restoration of the Everglades. Recently ATLSS was used to thoroughly evaluate all the proposed water level changes in the Everglades, and the potential impact of these changes to Everglades wildlife. This analysis provided the necessary information that allowed managers to determine the optimal changes in water levels for the Everglades.

of water flow under different management actions. Among the systematic analyses and investigations USGS is targeting for completion in FY 1999 under the Environment and Natural Resources GPRA Program Activity (goal code 02.01.01.02.99) is south Florida bathymetry. Ecological and hydrologic models form the basis for decisions concerning the consequences of management modifications. USGS will continue development of these models in FY 1999, and the Florida ecosystem website will be improved as a part of the decision support system target (goal code 02.01.01.03.99). These improvements will include additional information on ecosystem history which will also provide a yardstick for determining the success of the restoration and a better understanding of the backdrop of natural variability, against which anthropogenic changes must be judged.

**Forest Plan for the Pacific Northwest** — Management of Federal forests in the Pacific Northwest has received significant attention through the development and implementation of the President's Forest Plan. USGS continues to play an important role in the development of research and monitoring programs associated with the Northwest Forest Plan. For example, the status and trends of northern spotted owls and Pacific salmon are being monitored through several demographic studies on Bureau of Land Management, US Forest Service, and National Park Service lands in Washington, Oregon, and northern California (part of the Biomonitoring of Environmental Status and Trends and fish population monitoring in Pacific coasts long-term biological data collection and data management efforts counted under goal code 02.01.01.01.99). Information from silvicultural research is helping Bureau of Land Management and other managers understand how to restore and maintain these complex forest ecosystems.

**San Francisco Bay-Delta** — As part of the Department of the Interior's focus on San Francisco Bay/Delta and the CALFED process, the USGS has improved scientific understanding and communicated scientific knowledge to our partners within the CALFED community and to the general public. CALFED is a consortium of Federal and State agencies with management and regulatory responsibilities in the Bay-Delta. An award-winning World Wide Web presentation which synthesizes decades of water quality data is now readily available for Bay modeling and forecast development. In FY 1999, a model based on river flow and simulating changes in the salt content of water in

ecologically sensitive regions of the estuary (the X2 salinity standard) will be improved as a part of the decision support system target (goal code 02.01.01.03.99). The X2 standard was developed as part of a 1994 agreement between the EPA and California water agencies, water contractors, and environmental groups. The model can be used by CALFED partners to develop management strategies to meet this standard. In addressing the Environment and Natural Resources GPRA Program Activity (goal code 02.01.01.02.99), USGS systematic analyses and investigations are scheduled to complete in FY 1999 a determination of bathymetric changes (since 1850) in San Pablo Bay. This information will provide a record of sedimentation and contamination from mining debris and industrial sources in Bay bottom sediments, needed for planning dredging and wetland restoration activities.

**Wildland Fire** — The challenge of managing wildland fire in the United States is increasing in complexity and magnitude. Catastrophic wildfire now threatens millions of wildland acres, after a century of suppression. The need to reintroduce wildland fire on an ecologically significant scale is the focus of the new Federal Wildland Fire Policy, established in 1995. At the direction of Congress, DOI and the U.S. Forest Service have prepared a joint Fire Sciences Plan to address: (1) comprehensive fire fuels mapping and inventory, (2) evaluation of treatment techniques (including ecological consequences), (3) long-term schedules that describe sequencing of pre- and post-burn treatments, and (4) establishing protocols to monitor and evaluate fuel treatment techniques. USGS fire research, pursued in collaboration with the U.S. Forest Service and DOI fire management bureaus, contributes strongly to the areas identified by Congress as needing further research. Areas of emphasis are:

- Fire Behavior Modeling carried out in collaboration with the U.S. Forest Service, has improved existing fire behavior and fuel models to determine most appropriate application of fire treatments and provide better predictive capability at larger spatial scales.
- Fire Effect/Fire Rehabilitation studies, carried out in collaboration with DOI land management agencies, have led to improved understanding of direct fire effects on ecosystems, as well as how post-fire treatments can influence ecosystem response, particularly with regard to increased vulnerability to invasive exotic species and species at risk.
- Remote Sensing studies, carried out in collaboration with the U.S. Forest Service, are being used to assess vegetative conditions over large areas and may be used to assess fuel loading or to detect wildland fires and provide early warning of fire danger.

Other areas in which USGS has projects and capabilities include data management skills needed to set up comprehensive databases including fuels inventory, climate patterns, fire histories, species at risk, fire effects on resident wildlife species, habitat fragmentation and topographic features at a landscape scale. Lastly, USGS conducts post-burn monitoring studies to evaluate the effectiveness of fire fuel/vegetation treatment techniques for habitat

restoration and erosion control. Partners in these research activities include the U.S. Forest Service, and the academic community, in addition to the Bureau of Land Management, Fish and Wildlife Service, and the National Park Service. Both GPRA Program Activities contribute to the wildland fire crosscut. Under Hazards, one of the 6 hazards monitoring networks maintained (goal code 01.01.01.99) is the integrated hazards monitoring network which comprises a Hazards Support System and a Center for Integration of Natural Disaster Information to monitor natural events such as wildland fires that place citizens and property at risk. Under Environment and Natural Resources, new systematic analyses and investigations (goal code 02.01.01.02.99) include 14 planned completions relating to fire ecology.

### I.5.4 Management Issues

The U.S. Geological Survey has no management problems that have been identified on the Inspector General's list of top ten management issues released in FY 1998. The USGS also has no significant management problems of a mission-critical nature that threaten the achievement of major performance goals.

### I.5.5 Adjustments to the Strategic Plan

The rationale for revision of the Strategic Plan has been described in Section I.1. Being based on the original plan and the more detailed discipline-specific plans that followed, the USGS Vision and Mission statements remain similar. Minor wording changes and the addition of a strategic direction highlight the shift in the new plans' focus toward more customer-involvement. Further, a substantial reduction in the number of goals and performance measures has been achieved through aggregation in the new strategic and annual plans. At the end of this section are crosswalks of mission language and goal structure/statistics between the September 1997 and revised Strategic and Annual Plans.

This interim adjustment to the 1997 Strategic Plan was also guided by ongoing stakeholder meetings and workshops as well as intervening program evaluations such as the National Academy of Public Administration's review and report titled *Geographic Information for the 21st Century — Building a Strategy for the Nation* published January 1998. USGS review policy has the goal of conducting an independent peer review of ongoing programs every 5 years, combined with more frequent independent internal program management reviews. The review schedule has been updated in the revised Strategic Plan. These evaluations will continue to provide the USGS learning and growth opportunities to continue to refine strategy, implementation, and the quality and relevance of our scientific programs. A review of USGS strategic direction currently being conducted by the National Research Council and planned for completion by early calendar year 2000 will provide a basis for the updated and revised strategic plan due to Congress and OMB by September 2000 by helping us identify and interpret changing society and political environments; major societal needs that we should address; emerging scientific

and technical issues relevant to our mission; and opportunities for partnership.

The USGS is refocusing our Strategic Plan through this Annual Performance Plan. The revised FY 1999 Annual Plan is designed as a management tool. It documents both FY 1998 baseline metrics and FY 1999 performance targets and includes associated funding. The new Annual Plan metrics will be used for FY 1999 goal attainment tracking. Advantages are

- the quantitative nature of the revised FY 1999 performance plan targets for "completions" rather than "ongoing" projects;
- the substantial reduction in the number of performance goals and indicators from the original FY 1999 Annual Plan; and
- the opportunity to begin establishing trend data.

| Old Strategic Plan | Refocused Strategic Plan |
|---|---|
| **Vision**<br>The U.S. Geological Survey is an earth science organization that is recognized worldwide as scientifically credible, objective, and demonstrably relevant to society's needs. | **Vision**<br>The USGS is a world leader in the natural sciences through our scientific excellence and responsiveness to society's needs. |
| **Mission**<br>The U.S. Geological Survey provides the Nation with reliable, impartial information to describe and understand the Earth. This information is used to:<br>• minimize loss of life and property from natural disasters;<br>• manage water, biological, energy, and mineral resources;<br>• enhance and protect the quality of life; and<br>• contribute to wise economic and physical development. | **Mission**<br>The USGS serves the Nation by providing reliable scientific information to:<br>• describe and understand the Earth;<br>• minimize loss of life and property from natural disasters;<br>• manage water, biological, energy and mineral resources; and<br>• enhance and protect our quality of life. |
| | **Strategic Direction**<br>The USGS will combine and enhance our diverse programs, capabilities, and talents with increased customer involvement to strengthen our science leadership and contribution to the resolution of complex issues. |

| GPRA Strategic Plan | | | | GPRA Annual Plan | |
|---|---|---|---|---|---|
| Old GPRA Strategic Plan | New GPRA Strategic Plan | Old GPRA Strategic Plan | New GPRA Strategic Plan | Old GPRA Annual Plan | New GPRA Annual Plan |
| 8 Strategic Business Activity Goals | 2 Mission Goals | 67 Strategic Performance Goals | 2 Long-term Goals | 112 Annual Performance Goals | 10 Annual Performance Goals |
| BA-2 Hazards | Hazards | 14 | Hazards | 17 | 5 |
| BA-1 Water Availability & Quality | Environment & Natural Resources | 11 | Environment & Natural Resources | 20 | 5 |
| BA-3 Geographic & Cartographic Information | | 7 | | 19 | |
| BA-4 Contaminated Environments | | 6 | | 12 | |
| BA-5 Land and Water Use | | 9 | | 12 | |
| BA-6 Nonrenewable Resources | | 5 | | 7 | |
| BA-7 Environmental Effects on Human Health | | 3 | | 4 | |
| BA-8 Biological Resources | | 12 | | 21 | |

### I.5.6 Capital Assets/Capital Programming

The FY 1999 appropriation funds no major acquisitions that require a capital asset plan under the provisions of *OMB Circular A-11, Part 3*.

### I.5.7 Waivers for Managerial Accountability and Flexibility

The U.S. Geological Survey is requesting no waivers of administrative procedural requirements and controls.

# II. Mission-Related Goals

This section provides the USGS revised Annual Performance Plan for the budget year FY 1999, and provides prior year FY 1998 baseline data. The format for the goal section consists of narrative and **Exhibit A** for each of the two GPRA Program Activities. Annual performance goals present a complete picture of the performance related to the resources available for FY 1999. Goals and measures reflect performance expected from total resources available for implementing the annual plan; however, only appropriated dollars are shown in the table. The appropriated dollars contained in the tables for the GPRA Program Activities are rough estimates and are rounded to the nearest $100,000 to avoid the indication of more significance and reliability.

## II.1 GPRA Program Activity

### II.1.1 Description of GPRA Program Activity — Hazards

Under the Hazards GPRA Program Activity or mission goal, USGS provides science for a changing world in response to present and anticipated needs, focusing efforts to predict & monitor hazardous events in near-real and real-time and to conduct risk assessments to mitigate loss.

Within this mission context, our long-term goal is to ensure the continued transfer of hazards-related data, risk assessments, and disaster scenarios needed by our customers before, during, and after natural disasters, and by 2005, increase the delivery of real-time hazards information by adding telemetry to 600 streamgages (thus reducing the time it takes to provide flood information at these sites from 6 to 8 weeks to 4 hours) and installing 140 improved earthquake sensors (thus reducing delivery time of information on potentially damaging earthquakes from 40 to 20 minutes) to minimize the loss of life and property. In keeping with this focus, the FY 1999 annual plan identifies performance measures for the annual increment needed to achieve this long-term goal within available funds. Approximately 15% of total appropriated funding for FY 1999 supports the Hazards Goal.

### II.1.2 Strategic Issues Related to the Hazards GPRA Program Activity

In the long term, USGS will enhance our ability to characterize and monitor hazardous events in near-real and real-time by adding streamgages and earthquake sensors capable of delivering information nearly instantaneously. In addition, long-term data vital to both emergency response and to analysis of flood, earthquake and other hazard risk will continue to be collected and maintained through current monitoring networks. To better target key customers, a hazards network profile will be developed that will allow us to evaluate whether decision-makers are receiving timely hazards information. USGS will measure the reliability, delivery times, and accuracy of our real-time hazards information in order to evaluate improvements. We will improve the utility of our information by conducting risk assessments to mitigate losses by identifying for decisionmakers which areas are most vulnerable to

damage by particular hazards. Key scientific datasets integral to the delivery of hazards information -- accurate maps and geographic information, for example -- will be made easier to interpret and integrate in order to assist in rescue, recovery and reconstruction efforts. The quality of data will be continually improved by development of standards and protocols and improvements to the precision and accuracy of data collected.

USGS will focus on key users of hazards information, such as emergency managers, community planners and citizens to ensure that their needs are understood and are being met. We will increase development and delivery of products and services tailored to the needs of these customers, and work with customers in developing long-term strategies for anticipating their future needs.

USGS will maximize the efficiency of our administrative, science support and programmatic activities by streamlining hazards data delivery systems and eliminating any duplication or overlap. We will optimize our facilities infrastructure, use and quality to ensure the proper balance between the need to locate near our customers and the need to minimize costs.

USGS employees are the core of our long-term strategy for achieving the Hazards Goal. We will evaluate our current capabilities and skills and actively invest in training employees in the skills needed to deliver real-time hazards information, including the scientific skills to understand and model natural systems and information technologies such as geographic information systems and web delivery of data. USGS is aligning our rewards systems to reinforce employee responsiveness to customers' needs such as better prediction of and response to hazards and development of tools tailored to the needs of emergency managers. Finally, we will increase our flexibility to respond quickly and effectively to natural disasters by using new contractual vehicles for obtaining new skills, removing barriers for cross-organizational resource sharing, and increasing use of cooperative agreements with other entities responsible for emergency response.

### II.1.3 Related Budget Accounts, Budget Activities, Subactivities:

| Budget Activity/Subactivity ($000) | FY 1998 Enacted | | FY 1999 Pres. Budget | | FY 1999 Enacted | |
|---|---|---|---|---|---|---|
| | Total | Hazards | Total | Hazards | Total | Hazards |
| National Mapping Program | 135,785 | 6,324 | 151,789 | 20,904 | 138,315 | 6,015 |
| Mapping Data Collection & Integration | 65,096 | 0 | 61,024 | 0 | 63,858 | 0 |
| Earth Science Info Mngmnt & Delivery | 33,146 | 4,988 | 51,568 | 19,464 | 36,388 | 4,555 |
| Geog Res & Applications | 37,543 | 1,336 | 39,197 | 1,440 | 38,069 | 1,460 |
| Geologic Hazards , Resources, & Processes | 235,175 | 91,020 | 233,793 | 92,035 | 239,150 | 93,465 |
| Geologic Hazard Assessments | 75,032 | 75,032 | 76,435 | 76,435 | 76,369 | 76,369 |
| Geologic Landscape & Coastal Assessments | 72,986 | 15,988 | 71,216 | 15,600 | 74,091 | 17,096 |
| Geologic Resource Assess. | 87,157 | 0 | 86,142 | 0 | 88,690 | 0 |
| Water Resources Investigations | 194,882 | 13,857 | 214,187 | 13,889 | 209,153 | 13,921 |
| Water Resources Assess. & Res | 95,851 | 0 | 103,820 | 0 | 104,433 | 0 |
| Water Data Collect.& Mngmnt | 28,247 | 2,092 | 32,849 | 2,098 | 29,528 | 2,104 |
| Fed-State Coop | 66,231 | 11,765 | 71,961 | 11,791 | 70,137 | 11,817 |
| Water Resources Res. Act Prog | 4,553 | 0 | 5,557 | 0 | 5,055 | 0 |
| Biological Research | 145,159 | 0 | 158,312 | 0 | 162,461 | 0 |
| Bio Res & Monitoring | 122,815 | 0 | 135,314 | 0 | 138,521 | 0 |
| Bio Info Mngmnt & Delivery | 11,145 | 0 | 11,472 | 0 | 11,443 | 0 |
| Cooperative Research Units | 11,199 | 0 | 11,526 | 0 | 12,497 | 0 |
| **Programmatic Total** | **711,001** | **111,201** | **758,081** | **125,388** | **749,079** | **113,401** |
| General Administration (prorated) | 25,584 | 4,093 | 27,293 | 4,640 | 27,308 | 4,096 |
| Facilities (prorated) | 22,575 | 3,612 | 21,509 | 3,656 | 21,509 | 3,226 |
| SIR Appropriations Total (not including supplementals) | 759,160 | 118,906 | 806,883 | 133,684 | 797,896 | 120,723 |

### II.1.4 Proposed Legislation

Performance goals are not contingent on enactment of legislation during FY 1999.

### II.1.5 FY 1999 Performance Plan for Enacted Funding -- Comparison to Request

For FY 1999, the USGS proposed to augment the effective integration and communication of hazards information to emergency managers and the general public, requesting a $15 million increase. A funding increase was not appropriated for the Hazards goal.

Baseline rate of improvement of the flood and earthquake networks given a constant FY 1998

funding level plus uncontrollables will continue at 100 streamgages telemetered per year and 20 improved earthquake sensors installed per year. This rate will result in a total for FY 1999 of 4,671 telemetered streamgages and 120 improved earthquake sensors capable of delivering real-time information to minimize loss of life and property.

## II.2 FY 1999 Annual Performance Goal Detail and Narrative

Hazards are unpreventable natural events that, by their nature, may expose our Nation's population to the risk of death or injury and may damage or destroy private property, societal infrastructure, and agricultural or other developed land. USGS hazards mission activities deal with describing, documenting, and understanding natural hazards and their risks. These activities include long-term monitoring and forecasting, short-term prediction, real-time monitoring and communication with civil authorities and others during a crisis. Other significant activities are post-crisis analysis with scenario formulation to develop strategies to mitigate the impact of future events and preparation of coordinated risk assessments for regions vulnerable to natural hazards.

**USGS Mobilizes Coastal Storm Response Team**
**Feds coordinate data collection, safety, & science**

In August, the USGS, armed with a new coastal storm response plan, whirled into action to perform the critical task of gathering data about Hurricane Bonnie's assault on the East Coast. The action plan, developed at the USGS during the past six months, is specifically designed to create, in a very short period of time, an interdisciplinary team of USGS managers, scientists, and communications experts to ensure swift and effective internal and external coordination of activities and communications during a specific storm event.

USGS field personnel assist the NOAA and FEMA in measuring the amount (discharge) and height (stage) of rivers during an actual storm event. This "real-time" information, in addition to USGS topographic maps, is crucial for local officials having to make timely decisions about evacuating people in flood-prone areas. The USGS also assists the U.S. Army Corps of Engineers, when needed, in gathering
storm surge data along the coast. Another hurricane damage assessment activity involves the NASA, NOAA, and USGS in making coastal surveys of beach contours using a laser beam emitted from the bottom of an aircraft.

Because **hazards strike locally**, reducing loss of life and property means having comprehensive networks and other observing systems that cover any area where a particular kind of hazard event can strike, because we cannot know the location of a disaster very far in advance. It also means being able to communicate needed information to the people actually affected, and with the local first responders. This requires a comprehensive, and targetable, communications system.

Because **all hazard mitigation is local**, to successfully reduce loss of life and property, we need to be able to target individual urban areas, counties, etc. with hazards information and scenarios, and to engage individuals and their communities in both mitigation and preparedness plans. This means enhancing our ability to work with organizations such as National Emergency Managers Association and National Association of Counties that represent States and localities.

## Goal Achievement:

USGS will maintain our current extensive monitoring networks and continue to conduct risk assessments. Each year, we will add 100 streamgages with real-time capability and 20 earthquake sensors to enhance our capability to provide hazard information in real time. We will continue to maintain six hazards monitoring networks and deliver 14 risk assessments. To ensure that we are meeting customer needs, we will conduct at least 16 stakeholder meetings per year. We will improve our measurement of delivery time and continue to evaluate new technologies to reduce delivery and analysis time to our customers.

USGS will invest at least one percent of our budget in training to stay abreast of technological developments and scientific advances, including training for skills related to hazards, such as automatic data processing and real-time data dissemination and quality assurance. We will conduct an Organization Assessment Survey of our skills and managers in order to determine our current level of science, technical and administrative skills, including those needed to support the Hazards Goal. Similarly, one percent of the bureau's budget will be devoted to leadership skills such as leading change, business acumen and communications. USGS will evaluate our rewards systems to determine whether rewards are (1) consistent with the new strategic direction and mission and (2) consistent throughout the organization. We will identify any existing barriers to inter-divisional, inter-program resource sharing, particularly in cross-cutting program areas such as hazards. USGS will evaluate and conduct a Leadership Effectiveness Inventory (LEI) to determine strength and weaknesses.

To improve operational efficiencies, USGS will identify administrative, science support and programmatic activities where improvements in operational efficiencies can be made. We will also inventory our facilities and conduct an analysis of location, use and condition.

USGS will systematically identify, program by program, our full customer base and characterize their issues, concerns and requirements for our products. We will analyze the products and services we provide to customers and will target a two percent increase per year in products and services tailored to customer needs in the years FY 1999 - 2004. USGS will conduct customer satisfaction surveys in each of the programs that have fully identified and targeted key customers.

# Exhibit A - Performance Plan

| | FY 1999 Requested BA ($000) | FY 1999 Enacted BA ($000) |
|---|---|---|
| **GPRA Program Activity**<br>**01 Hazards**: Provide science for a changing world in response to present and anticipated needs, focusing efforts to predict & monitor hazardous events in near-real and real-time and to conduct risk assessments to mitigate loss. | 133,684 | 120,723 |

**01.01 Long-term Goal**: Ensure the continued transfer of hazards-related data, risk assessments, and disaster scenarios needed by our customers before, during, and after natural disasters, and by 2005, increase the delivery of real-time hazards information by adding telemetry to 600 streamgages (thus reducing the time it takes to provide flood information at that site from 6 to 8 weeks to 4 hours) and installing 140 improved earthquake sensors (thus reducing delivery time of information on potentially damaging earthquakes from 40 to 20 minutes) to minimize the loss of life and property.

**01.01.01 FY 1999 Annual Performance Goal**: Develop, maintain and improve monitoring networks and techniques of risk assessment by: maintaining the baseline of data and risk assessments transferred to customers; increasing by 100 sites streamgages with real-time capability, and increasing by 20 improved earthquake sensors.

| **Performance Measures** | **FY 1997 Actual** | **FY 1998 Actual** | **FY 1999 Plan** | **FY 1999 Actual** |
|---|---|---|---|---|
| 01.01.01.01.99 Hazards monitoring networks maintained | 6 | 6 | 6 | |
| 01.01.01.02.99 Risk assessments delivered | n/a | 16 | 14 | |
| 01.01.01.03.99 Real-time streamgages (cumulative) | 4,467 | 4,571[1] | 4,671[2] | |
| 01.01.01.04.99 Real-time earthquake sensors (cumulative) | 70 | 100[3] | 120[4] | |
| 01.01.01.05.99 Stakeholder meetings | n/a | 16 | 16 | |
| **Workload and Other Performance Statistics** | | | | |
| 1. Maintain streamgages (cumulative) | 6,959 | 6,900 | 6,900 | |

[1] Cumulative targets show the overall size of the network. The FY 98 total includes the FY 97 level plus an annual increment of 100.

[2] The FY 99 total includes 100 more than FY 98.

[3] Cumulative targets show the overall size of the network. The FY 98 level includes 30 more than FY97.

[4] The FY 99 level includes 20 more than FY98.

Note: Our "numeric" performance tracking is focused on "completions" of science such as risk assessments that are accessible and used by our customers through our increasing dialogue and technical support for their applications. Pursuant to *OMB Circular A-11, Part 2, § 220.10,* it should be noted that the FY 1999 initiatives include some long-term efforts, the completion of which will not be achieved until outyears. Similarly, FY 1999 performance targets include "completions" funded by prior year monies.

## II.1 GPRA Program Activity

### II.1.1 Description of GPRA Program Activity — Environment and Natural Resources

Under the Environment and Natural Resources GPRA Program Activity or mission goal, USGS provides science for a changing world in response to present and anticipated needs to expand our understanding of environmental and natural resource issues on regional, national, and global scales and enhance predictive/forecast modeling capabilities.

Within this mission context, our long-term goal is to ensure the continued availability of long term environmental and natural resource information and systematic analysis and investigations needed by customers, and by 2005, develop 20 new decision support systems and predictive tools for informed decisionmaking about natural systems. In keeping with this focus, the FY 1999 annual plan identifies performance measures for the annual increment needed to achieve this long-term goal within available funds. Approximately 85% of total appropriated funding for FY 1999 supports the Environment and Natural Resources Goal.

### II.1.2 Strategic Issues Related to the Environment and Natural Resources GPRA Program Activity

In the long term, USGS will provide our customers with better understanding of natural systems at all scales, with more and better predictive tools and decision support systems, and with increased access to and usability of its data. In particular, USGS will implement our Information Infrastructure Plan to ensure that data comply with common standards and protocols. USGS will continue to improve the quality and usability of our long term datasets: water availability and quality, mineral and energy information, biological data and information, water use information and high-quality digital maps. We will also develop specialized products to better serve customers' needs. We will focus on key users of environment and natural resources information, such as Federal, State and local managers, to ensure that their needs are understood and are being met. USGS will increase development and delivery of products and services tailored to the needs of these customers, and work with customers in developing long-term strategies for anticipating their future needs. In particular, we will emphasize developing predictive capabilities for decisionmakers by developing forecasting and predictive models and sophisticated decision support systems that allow managers and decision makers to ask "what if" questions and develop alternative scenarios.

USGS will improve the efficiency of our administrative, science support and programmatic activities to streamline systems for delivery of environment and natural resources data and information and eliminating any duplication or overlap. We will optimize the infrastructure, use, and quality of our facilities to balance the need to locate near customers who use our information and the need to minimize costs.

As with the Hazards Strategic Goal, USGS employees are the core of our long-term strategy for achieving the Environment and Natural Resources Goal. We will assess our current

capabilities and skills and actively invest in training our employees in the skills needed to improve our ability to understand natural systems, develop improved forecasting and predictive models and better communicate with customers. USGS is aligning our rewards systems so that contributions by employees to meeting key customers needs are fully rewarded. Finally, USGS will take steps to increase our flexibility to respond quickly and effectively to the needs of our customers by putting in place new contractual vehicles for obtaining new skills, removing barriers for cross-organizational resource sharing, and increasing our use of cooperative agreements with other entities who use our data and information on natural resources and the environment.

### II.1.3 Related Budget Accounts, Budget Activities, Subactivities:

| Budget Activity/Subactivity ($000) | FY 1998 Enacted | | FY 1999 Pres. Budget | | FY 1999 Enacted | |
|---|---|---|---|---|---|---|
| | Total | Env & Nat Resources | Total | Env & Nat Resources | Total | Env & Nat Resources |
| National Mapping Program | 135,785 | 129,461 | 151,789 | 130,885 | 138,315 | 132,300 |
| Mapping Data Collection & Integration | 65,096 | 65,096 | 61,024 | 61,024 | 63,858 | 63,858 |
| Earth Science Info Mngmnt & Delivery | 33,146 | 28,158 | 51,568 | 32,104 | 36,388 | 31,833 |
| Geog Res & Applications | 37,543 | 36,207 | 39,197 | 37,757 | 38,069 | 36,609 |
| Geologic Hazards , Resources, & Processes | 235,175 | 144,155 | 233,793 | 141,758 | 239,150 | 145,685 |
| Geologic Hazard Assessments | 75,032 | 0 | 76,435 | 0 | 76,369 | 0 |
| Geologic Landscape & Coastal Assessments | 72,986 | 56,998 | 71,216 | 55,616 | 74,091 | 56,995 |
| Geologic Resource Assess. | 87,157 | 87,157 | 86,142 | 86,142 | 88,690 | 88,690 |
| Water Resources Investigations | 194,882 | 181,025 | 214,187 | 200,298 | 209,153 | 195,232 |
| Water Resources Assess. & Res | 95,851 | 95,851 | 103,820 | 103,820 | 104,433 | 104,433 |
| Water Data Collect.& Mngmnt | 28,247 | 26,155 | 32,849 | 30,751 | 29,528 | 27,424 |
| Fed-State Coop | 66,231 | 54,466 | 71,961 | 60,170 | 70,137 | 58,320 |
| Water Resources Res. Act Prog | 4,553 | 4,553 | 5,557 | 5,557 | 5,055 | 5,055 |
| Biological Research | 145,159 | 145,159 | 158,312 | 158,312 | 162,461 | 162,461 |
| Bio Res & Monitoring | 122,815 | 122,815 | 135,314 | 135,314 | 138,521 | 138,521 |
| Bio Info Mngmnt & Delivery | 11,145 | 11,145 | 11,472 | 11,472 | 11,443 | 11,443 |
| Cooperative Research Units | 11,199 | 11,199 | 11,526 | 11,526 | 12,497 | 12,497 |
| **Programmatic Total** | **711,001** | **599,800** | **758,081** | **632,693** | **749,079** | **635,678** |
| General Administration (prorated) | 25,584 | 21,491 | 27,293 | 22,653 | 27,308 | 23,212 |
| Facilities (prorated) | 22,575 | 18,963 | 21,509 | 17,853 | 21,509 | 18,283 |
| SIR Appropriations Total (not including supplementals) | 759,160 | 640,254 | 806,883 | 673,199 | 797,896 | 677,173 |

### II.1.4 Proposed Legislation

Performance goals are not contingent on enactment of legislation during the fiscal year covered by the annual plan.

### II.1.5 FY 1999 Performance Plan for Enacted Funding — Comparison to Request

For FY 1999 Congress restored 93% ($14.5 million) of the $15.6 million requested programmatic funding decreases and provided half ($18.75 million) of the requested $37.0 million in requested programmatic funding increases for the environment and natural resources goal.

The USGS will continue to maintain and improve long-term data collection and data management efforts and large-scale data infrastructures with particular emphasis in FY 1999 on augmentation of archive systems and conversion of new data for the National Satellite Land Remote Sensing Data Archive (requested $2.5 million funding increase enacted).

Funding increases for clean water ($12.75 million) and habitat and species protection ($3.5 million appropriated) initiatives in FY 1999 will largely impact outyear achievements for systematic analyses and investigations.

University-based partnerships for natural systems analysis will increase by 2 with addition of a Water Institute grant to the Northern Marianas and the congressional addition of $6.6 million for a grant to the University of Alaska for basic marine research activities in the North Pacific Ocean pursuant to a plan approved by the Department of Commerce, the DOI, and the State of Alaska. Under congressional direction, USGS will use the $1.0 million funding increase for Cooperative Research Units “to fill as many vacancies as possible.”

## II.2 FY 1999 Annual Performance Goal Detail and Narrative

Our environment — the air, water, soil, and plant and animal life — is constantly changing as natural processes and human actions affect it. Changes in demographics also affect the competition for and use of the renewable and nonrenewable natural resources — land, water, minerals, and energy — needed to sustain life and to maintain and enhance our Nation's economic strength. The traditional boundaries between environment and natural resources science are increasingly blurring as land and resource management decisions deal with increasingly complex issues affecting both. The need for cross-disciplinary integrated science has never been more apparent. USGS environment and natural resources mission activities deal with studies of natural, physical, chemical, and biological processes, and of the results of human actions. These studies encompass collecting data, making long-term assessments, conducting ecosystem analyses, monitoring change, and forecasting the changes that may be expected in the future.

The USGS cannot, and does not seek to, collect all of the environmental and natural resources data required for managers, regulators, and the general public to make informed decisions. We are increasingly **building partnerships** among Federal, State, local, private, and industrial entities to leverage resources and expertise. **Established protocols for data collection** are critical to success in ensuring the comparability of data, the validity of interpretations based on these data, the ability to integrate data, and ultimately the usefulness of these data and interpretations for land and resource decisionmaking. The USGS is working with customers to identify their long-term environmental and natural resource issues, current trends, and available information to improve our data collection and data management efforts, to deliver systematic analyses needed by our customers and to develop and improve decision support systems. We are also seeking new applications and increased use of our classified assets.

**Integrating Science, Monitoring, and Management**

USGS scientists and Upper Mississippi River National Wildlife and Fish Refuge (USFWS) have developed a prototype decision support system, a rapid-access, user-friendly and scientifically-based tool to aid Mississippi River managers. Rapid and succinct communication of complex and voluminous scientific information is central to successful science-based conflict resolution in a partnership framework. Built upon a joint effort, "The Management Strategy for Migratory Birds on the Upper Mississippi River Corridor," this prototype is an integrated, ecological, and pro-active approach to management of migratory bird habitats in the context of other landscape, biological, and sociological components. Data from the Long-term Resource Monitoring Program, a cooperative State-DOI-Army Corps of Engineers effort authorized under the Water Resources Development Act of 1986, underpin the project. This digital decision support system is an electronic ecosystem encyclopedia for planners, integrating physical, land cover, biological, and social themes. The system is PC-based with available commercial software, making the manager's interface accessible and cost-effective. The prototype system is used daily by the La Crosse District of the Upper Mississippi River National Wildlife & Fish Refuge to make management decisions.

## Goal Achievement:

USGS will maintain our current efforts to provide and improve long-term environmental and natural resource information, systematic analysis and investigations, and predictive tools for decision making about natural systems. We will maintain at least 38 long term data collection/data management efforts such as the national water data networks, biological monitoring of environmental status and trends, National Aerial Photography Program, and energy assessments. We will support two large data infrastructures such as the National Biological Information Infrastructure (NBII) and National Spatial Data Infrastructure (NSDI) each year, and will deliver 843 new systematic analysis and investigations to our customers. We will improve, develop and deliver to customers four decision support systems and continue our long-standing collaboration with university and other partners through the development of 272 external grants and contracts.

**National Spatial Data Infrastructure (NSDI)**

The USGS, as executive secretariat for the Federal Geographic Data Committee (FGDC), is supporting the development, implementation, and promotion of NSDI data standards. In FY 1998 the USGS led four national standards development efforts: (1) the National Standard for Spatial Data Accuracy, (2) the Content Standard for Digital Orthoimagery, (3) the Content Standard for Digital Gridded Land Elevation Data, and (4) the Content Standard for Digital Geospatial Metadata. Additionally, the USGS is the maintenance authority for the Spatial Data Transfer Standard (SDTS) and supporting data profiles. The American National Standards Institute formally adopted SDTS as a national standard in July 1998.

Such data standards provide the geospatial data community with an improved and consistent approach for using and sharing geospatial data. They constitute a critical component to vigorous implementation of the National Spatial Data Infrastructure.

USGS will invest at least one percent of our budget in training to stay abreast of technological developments and scientific advances, including training to improve long term data collection and analysis, research and development and assessments and applications of new technologies. USGS will conduct an Organization Assessment Survey of its skills and managers in order to determine our current level of science, technical and administrative skills, including those needed to support the Natural Resources and Environment Goal. Similarly, one percent of the bureau's budget will be devoted to leadership skills such as leading change, business acumen and communications. USGS will evaluate our rewards systems to determine whether rewards are (1) consistent with the new strategic direction and mission and (2) consistent throughout the organization. USGS will identify any existing barriers to inter-divisional, inter-program resource sharing, particularly in cross-cutting program areas such as environment and natural resources. We will evaluate and conduct a Leadership Effectiveness Inventory (LEI) to determine strength and weaknesses.

To improve operational efficiencies, USGS will identify administrative, science support and programmatic activities where improvements in operational efficiencies can be made. USGS will inventory its facilities and conduct an analysis of location, use and condition.

USGS will identify our customer base for each program and characterize their issues, concerns

and requirements for USGS products. We will analyze the products and services we provide our customers, targeting a two percent increase per year in products and services tailored to customer needs in FY 1999 - 2004, and will conduct customer satisfaction surveys.

# Exhibit A - Performance Plan

| | FY 1999 Requested BA ($000) | FY 1999 Enacted BA ($000) |
|---|---|---|
| **GPRA Program Activity**<br>**02 Environment and Natural Resources**: Provide science for a changing world in response to present and anticipated needs to expand our understanding of environmental and natural resource issues on regional, national, and global scales and enhance predictive/forecast modeling capabilities. | 673,199 | 677,173 |

**02.01 Long-term Goal**: Ensure the continued availability of long term environmental and natural resource information and systematic analysis and investigations needed by customers, and by 2005, develop 20 new decision support systems and predictive tools for informed decisionmaking about natural systems.

**02.01.01 FY 1999 Annual Performance Goal**: Provide and improve long-term environmental and natural resource information, systematic analysis and investigations, and predictive options for decisionmaking about natural systems by: providing essential information to address environmental and natural resources issues by maintaining 38 long-term data collection/data management efforts and supporting 2 large data infrastructures managed in partnership with others; delivering 843 new systematic analyses and investigations to our customers; improving and developing 6 new decision support systems and predictive tools for decisionmaking; and collaborating with university partners to understand natural systems and facilitate sound management practices through 272 external grants and contracts.

| **Performance Measures** | **FY 1997 Actual** | **FY 1998 Actual** | **FY 1999 Plan** | **FY 1999 Actual** |
|---|---|---|---|---|
| 02.01.01.01.99 Long-term data collection and data management efforts maintained & improved and large data infrastructures supported | 34 | 40 | 40[1] | |
| 02.01.01.02.99 New systematic analyses & investigations delivered to customers | n/a | 865 | 843 | |
| 02.01.01.03.99 Decision support systems or predictive models developed or improved and delivered to customers | n/a | 5 | 6[2] | |
| 02.01.01.04.99 University-based partnerships for natural systems analysis | 235 | 270 | 272[3] | |
| 02.01.01.05.99 Stakeholder meetings (at least one per program) | 207 | 212 | 228 | |

[1] Total number of data management efforts remains constant, but capacity of the National Satellite Land Remote Sensing Data Archive will increase with increased funding.

[2] Completions average 1 per discipline (biology, geology, hydrology, and mapping).

[3] Increase of 2 results from the congressional addition of $6.6 million for a grant to the Univ.of Alaska and from a new Water Institute grant to the Northern Marianas.

Note: Our "numeric" performance tracking is focused on "completions" of science such as systematic analyses and decision support systems that are accessible and used by our customers through our increasing dialogue and technical support for their applications. Pursuant to *OMB Circular A-11, Part 2, § 220.10*, it should be noted that the FY 1999 initiatives include some long-term efforts, the completion of which will not be achieved until outyears. Similarly, FY 1999 performance targets include "completions" funded by prior year monies.

## III. Means Goals

Goals for internal bureau functions and operations, while a part of the balanced scorecard approach to strategy implementation, are not included in the GPRA Annual Plan. Rather, they are discussed within the context of operational processes, technology, financial and human resources necessary to achieve each annual performance goal within the GPRA Program Activity. The Department-wide management goals supported by the USGS are reported through the Department. There are no additional means goals that are uniquely critical or significant to the accomplishment of the USGS mission.

# IV. Performance Measures and Verification

**Exhibit B**

| Annual Performance Goal | Performance Measure and Definition | FY 1998 Baseline (See Appendix for details) | Data Collection Methodology And Sources | Validation |
|---|---|---|---|---|
| **01.01.01Hazards**:<br><br>Develop, maintain & improve monitoring networks& techniques of risk assessment by: maintaining the baseline of data & risk assessments transferred to customers; increasing by 100 sites streamgages with real-time capability, & increasing by 20 improved earthquake sensors | **01.01.01.01.99 Hazards monitoring networks maintained**<br>A monitoring network consists of an array of sensing devices, IT infrastructure, & personnel that together detect, record, interpret, integrate & deliver data for a given hazard | 6 hazards networks (flood, earthquake, volcano, landslide, geomagnetic, and an integrated monitoring network) are maintained by USGS | Managers monitor & supervise functioning of networks at observatories, research centers, and Water Districts, & report status by exception | Program Coordinators/ Program Council validate |
| | **01.01.01.02.99 Risk assessments delivered**<br>Regional or national assessment of risk for 1 or more hazards | 16 risk assessments delivered | Hazards assessments are tracked as published USGS reports; Hazards notifications based on monitoring data are recorded at and reported by USGS observatories, centers, etc. | Official USGS Annual Publications listing verifies publication |
| | **01.01.01.03.99 Real-time streamgages**<br>Telemetry is added to existing streamgages to provide real-time flow info for NWS forecasters & emergency management & response officials | 4,571 of 6,900 gages were instrumented by the end of FY 1998. Telemetry will be added to 100 gages per year. | Annual inventory of streamgaging stations conducted by all USGS Water District Office data section chiefs and reported to HQ at the end of the fiscal year | Certification by each District Chief and the Chief of the Office of Surface Water |
| | **01.01.01.04.99 Real-time earthquake sensors**<br>Ground motion detectors are the initial instrument installed to capture & transmit real-time info | 100 strong ground motion detectors are installed and operating. 20 improved sensors will be installed per year | Annual inventory of earthquake sensors conducted by Seismic Network operators and reported to HQ at the end of the fiscal year | Certification by Coordinator of the Earthquake Hazards Program |
| | **01.01.01.05.99 Stakeholder meetings**<br>Major meetings with other Feds, customers, cooperators, Administration & congressional oversight groups &/or the public who have a major role/interest in hazard warning or response | 16 meetings average per year to enhance or improve the strategic direction & management of the program | Program coordinator schedules, organizes/attends annual stakeholder meetings & maintains records that the meetings have taken place | Regional Director or Division Chief verifies that stakeholder meetings have taken place. |

| Annual Performance Goal | Performance Measure and Definition | FY 1998 Baseline (See Appendix for details) | Data Collection Methodology And Sources | Validation |
|---|---|---|---|---|
| **02.01.01 Environment and Natural Resources**: Provide & improve long-term environmental & natural resource information, systematic analysis & investigations, & predictive options for decision making about natural systems by: providing essential information to address environmental & natural resources issues by maintaining 38 long term data collection/data management efforts & supporting 2 large data infrastructures managed in partnership with others; delivering 843 new systematic analyses & investigations to our customers; improving & developing 6 new decision support systems & predictive tools for decision-making; & collaborating with university partners to understand natural systems and facilitate sound management practices through 272 external grants and contracts. | **02.01.01.01.99 Long-term data collection & data management efforts maintained & improved & large data infrastructures supported**<br>Long-term, large-scale data base efforts to ensure the collection, preservation, and dissemination of natural science data, including support for the development of national infrastructures for the manage-ment and sharing of these data produced at all levels of government. | 38 databases<br>2 large-scale infrastructures | Data are collected by project scientists at research/field centers and are reported through an automated, electronic system | For geospatial databases, reports provided by the Federal Financial System and the Sales Data Base verify the amount of maps, data, aerial photographs, and satellite images available in the various databases and inventories. For geologic data bases, certification is made by Program Coordinator. For water resources data collection, certification is made by each District Chief & the Office of Surface Water. For biological databases, validation occurs through national program element reviews and reviews of individual research centers. |
| | **02.01.01.02.99 New systematic analyses & investigations delivered to customers**<br>Reports or other products delivered to managers or the scientific community that result from long-term assessments or from investigations to determine causes and/or effects of environmental change. Reports and other products are delivered as paper copies or Internet products. | 865 New systematic analyses & investigations delivered to customers | USGS compiles a list of new publications monthly and makes it available on the Internet at:<br><br>http://pubs.usgs.gov/publications/index.html<br><br>A paper version of this list is updated quarterly. | Accuracy of "new reports" listing can be confirmed by the internal organizations' reports tracking system. |

| Annual Performance Goal | Performance Measure and Definition | FY 1998 Baseline (See Appendix for details) | Data Collection Methodology And Sources | Validation |
|---|---|---|---|---|
| | **02.01.01.03.99 Decision support systems or predictive models developed or improved & delivered to customers**<br>Decision support tools and predictive models are broad in scope, are robust, yield either quantitative predictions about natural resources or the environment or quantitative options for land and resource management, and are used regularly by managers for informed decisionmaking. | 5 Decision support systems or predictive models developed or improved & delivered to customers per year (average one per scientific discipline within USGS) | Data on development delivery and use of decision support systems and predictive models are monitored and reported by project scientists at research/field centers and are reported through automated, electronic systems such as http://water.usgs.gov/software/ for new water investigation models and Science Information System (SIS) http://www.nbs.gov/science/currproj.html for biological models | For mapping models, the Senior Program Advisor for Geographic Research & Applications validates delivery & use by customers. For geologic models, validation is conducted by Program Councils & stakeholder reps. For water resources models, a technical memorandum is issued for each model. For biological models, validation occurs through national program element reviews and reviews of individual research centers. Ultimately customers validate that the systems & models are acceptable & useful. |
| | **02.01.01.04.99 University-based partnerships for natural system analysis** | 55 Water Resources Research Institute grants<br>215 biological research work orders (coop units) | For water resources research partnerships, source of data is the Chief, Office of Research. For biological partnerships, source of data is the Cooperative Research Unit Coordinator. | Certification from USGS Contracts Office that the partnerships have been awarded. |
| | **02.01.01.05.99 Stakeholder meetings**<br>Major meetings with other Feds, customers, cooperators, Administration & congressional oversight groups &/or the public who have a major role/interest in environmental & natural resource issues | 212 meetings average per year to enhance or improve the strategic direction & management of the program | Program coordinator schedules, organizes/ attends annual stakeholder meetings & maintains records that the meetings have taken place | Regional Director or Division Chief verifies that stakeholder meetings have taken place. |

# Appendix

## Index of Common Terms

**Goal Category**, this optional classification exists only to provide a common way of grouping the major themes of an organization.

**Mission Goal** is a classification identifying outcome oriented goals that define how an organization will carry out its mission.

**Long-Term Goals** are the "general performance goals and objectives" identified in the Government Performance and Results Act. They define the intended result, effect, or consequence for what the organization does. They provide a measurable indication of future success by providing target levels of performance and a time frame for accomplishment. Long-term goals should focus on outcomes rather than outputs (products and services).

**Annual Goal** is a one-year increment of the long-term goal. It contains a targeted level of performance to be achieved for a particular year. It is to be expressed in an objective, quantifiable, and measurable form. OMB approval of an alternative form of evaluating the success of a program is required if the annual goal cannot be expressed in an objective or quantifiable manner.

**GPRA Program Activity**, is described as the consolidation, aggregation or disaggregation of program activities that are covered or described by a set of performance goals, provided that any aggregation or consolidation does not omit or minimize the significance of any program constituting a major agency function or operation.

**Operating Plan or Revised Final Annual Performance Plan**, this plan primarily reflects Congressional action on the Agency's budget request. Bureaus may change target levels for performance goals where the targets are materially affected by Congressional action, introduce new goals in response to Congress, or modify goals because unanticipated exigencies occurred since submission of Final Plan to Congress.

# Crosswalk of Funding Distribution from Budget Structure to GPRA Program Activity

| Budget Activity/Subactivity ($000) | FY 1998 Enacted | | | FY 1999 Pres. Budget | | | FY 1999 Enacted | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | Hazards | Env & Nat Res | Total | Hazards | Env & Nat Res | Total | Hazards | Env & Nat Res |
| National Mapping Program | 135,785 | 6,324 | 129,461 | 151,789 | 20,904 | 130,885 | 138,315 | 6,015 | 132,300 |
| Mapping Data Collection & Integration | 65,096 | 0 | 65,096 | 61,024 | 0 | 61,024 | 63,858 | 0 | 63,858 |
| Earth Science Info Mngmnt & Delivery | 33,146 | 4,988 | 28,158 | 51,568 | 19,464 | 32,104 | 36,388 | 4,555 | 31,833 |
| Geog Res & Applications | 37,543 | 1,336 | 36,207 | 39,197 | 1,440 | 37,757 | 38,069 | 1,460 | 36,609 |
| Geologic Hazards , Resources, & Processes | 235,175 | 91,020 | 144,155 | 233,793 | 92,035 | 141,758 | 239,150 | 93,465 | 145,685 |
| Geologic Hazard Assessments | 75,032 | 75,032 | 0 | 76,435 | 76,435 | 0 | 76,369 | 76,369 | 0 |
| Geologic Landscape & Coastal Assessments | 72,986 | 15,988 | 56,998 | 71,216 | 15,600 | 55,616 | 74,091 | 17,096 | 56,995 |
| Geologic Resource Assess. | 87,157 | 0 | 87,157 | 86,142 | 0 | 86,142 | 88,690 | 0 | 88,690 |
| Water Resources Investigations | 194,882 | 13,857 | 181,025 | 214,187 | 13,889 | 200,298 | 209,153 | 13,921 | 195,232 |
| Water Resources Assess. & Res | 95,851 | 0 | 95,851 | 103,820 | 0 | 103,820 | 104,433 | 0 | 104,433 |
| Water Data Collect.& Mngmnt | 28,247 | 2,092 | 26,155 | 32,849 | 2,098 | 30,751 | 29,528 | 2,104 | 27,424 |
| Fed-State Coop | 66,231 | 11,765 | 54,466 | 71,961 | 11,791 | 60,170 | 70,137 | 11,817 | 58,320 |
| Water Resources Res. Act Prog | 4,553 | 0 | 4,553 | 5,557 | 0 | 5,557 | 5,055 | 0 | 5,055 |
| Biological Research | 145,159 | 0 | 145,159 | 158,312 | 0 | 158,312 | 162,461 | 0 | 162,461 |
| Bio Res & Monitoring | 122,815 | 0 | 122,815 | 135,314 | 0 | 135,314 | 138,521 | 0 | 138,521 |
| Bio Info Mngmnt & Delivery | 11,145 | 0 | 11,145 | 11,472 | 0 | 11,472 | 11,443 | 0 | 11,443 |
| Cooperative Research Units | 11,199 | 0 | 11,199 | 11,526 | 0 | 11,526 | 12,497 | 0 | 12,497 |
| **Programmatic Total** | **711,001** | **111,201** | **599,800** | **758,081** | **125,388** | **632,693** | **749,079** | **113,401** | **635,678** |
| General Administration (prorated) | 25,584 | 4,093 | 21,491 | 27,293 | 4,640 | 22,653 | 27,308 | 4,096 | 23,212 |
| Facilities (prorated) | 22,575 | 3,612 | 18,963 | 21,509 | 3,656 | 17,853 | 21,509 | 3,226 | 18,283 |
| SIR Appropriations Total (not including supplementals) | 759,160 | 118,906 | 640,254 | 806,883 | 133,684 | 673,199 | 797,896 | 120,723 | 677,173 |

# FY 1998 Baseline Documentation

## Hazards

**Annual Performance Goal — Hazards**: Develop, maintain and improve monitoring networks and techniques of risk assessment by: maintaining the baseline of data and risk assessments transferred to customers; increasing by 100 sites streamgages with real-time capability, and increasing by 20 improved earthquake sensors.

**Performance Measures**

**1. 6 Hazards monitoring networks maintained**

- **1 flood hazards network** (the national streamgaging network) comprises about 6,900 stations in FY 1997. These stations are funded by the Hydrologic Networks & Analysis Program and the Fed-State Coop Water Program. Includes some data collection sites funded in part or in whole by State matching funds under the Federal-State Cooperative Water Program, and some sites funded in part or in whole by reimbursements from other Federal agencies. The total number of streamgaging stations referenced here also includes streamgaging stations which contribute to the Environment and Natural Resources annual goal. These stations are multi-purpose, so that any individual station cannot be classified as 100% Hazards or 100% Environment and Natural Resources.

- **1 volcano hazards network** monitors 42 U.S. volcanoes in 5 volcanic regions. Funded by the Volcano Hazards Program.

- **1 earthquake hazards network** comprises one Global Seismographic Network (81 stations located worldwide in FY 1998), a National Seismic Network, and seventeen regional networks — together these networks provide an integrated means of monitoring, analyzing, and reporting on seismic activity in the United States. Funded by the Earthquake Hazards Program and the Global Seismographic Network Program.

- **1 geomagnetic hazards network** comprises 13 geomagnetic observatories to monitor changes in the earth's magnetic field and to issue warnings regarding the onset and severity of geomagnetic storms. Funded by the Geomagnetism component of the Earthquake Hazards Program.

- **1 landslide hazards network** currently monitoring 3 landslides in Colorado, California, and Washington State. Funded by the Landslide Hazards Program.

- **1 integrated hazards monitoring network** comprises a Hazards Support System and a Center for Integration of Natural Disaster Information, using national classified assets in conjunction with other sources, to monitor natural events which place citizens and property at risk. Funded by the Earth Science Information Management and Delivery and the Geographic

Research and Applications Programs.

**2. 16 Risk assessments delivered**

- **5 studies related to the assessment of risks from flood hazards** were completed by USGS in FY 1998. Includes regional (State) flood frequency analyses nationwide to enhance the use of hazards assessments by decision-makers; there are 50 assessments total, one for each State. Also includes studies to analyze the effects of stream scour on highway bridges and stream banks. All these studies are funded by the Fed-State Coop Water Program.

- **4 volcano risk assessments** per year regarding potential hazards at individual volcano centers. By FY 1998, hazard assessments have been prepared for 21 U.S. volcanoes. Funded by the Volcano Hazards Program.

- **0 earthquake risk assessments**

- **6 coastal risk assessments**, part of a series of regional assessments for the purpose of understanding the processes impacting coastal risk due to erosion, earthquakes, tsunamis and landslides. In 1997, the program had such assessments underway involving about 5% of the coast of the Conterminous U.S. and Great Lakes. 4 regional assessments are scheduled for completion and delivery to customers in each fiscal year. Funded by the Coastal and Marine Geology Program.

- **1 landslide risk assessment** periodic update of a national landslide susceptibility database. Funded by the Landslide Hazards Program.

**3. 4,571 Real-time streamgages — 104 streamgages were instrumented with telemetry** to provide real-time flow information for National Weather Service river forecasters and emergency management and response officials. Funded by the Hydrologic Networks & Analysis Program.

**4. 100 Real-time earthquake sensors — 20 ground motion detectors per year are purchased and installed** to serve as the initial instrument for use in pursuing the "real-time" capture and transmission of information regarding earthquakes. Funded by the Earthquake Hazards Program.

**5. 16 Stakeholder meetings**

- **6 flood hazard meetings** coordinated by the Office of Surface Water with other Federal agencies who play a major role in hazard warning and response. Meetings occur at least once per year; involve customers, cooperators, Administration and Congressional oversight groups, and/or the public, collectively or separately; and are used to enhance or improve the strategic direction and the management of the program. Three annual meetings with National Weather Service , 1 with U.S. Army Corps of Engineers, and 2 with ACWI Streamgaging Task Force.

- **2 volcano hazard stakeholder meetings**
- **1 earthquake hazard stakeholder meeting**
- **0 global seismic network stakeholder meeting**
- **0 geomagnetic hazard stakeholder meeting**
- **5 coastal hazard stakeholder meetings**
- **0 landslide hazard stakeholder meetings**
- **2 integrated hazards monitoring stakeholder meeting**
  USGS/NIMA Strategic Partnership Meetings - 2

# FY 1998 Baseline Documentation

## Environment and Natural Resources

**Annual Performance Goal — Environment and Natural Resources**: Provide and improve long-term environmental and natural resource information, systematic analysis and investigations, and predictive options for decision making about natural systems by: providing essential information to address environmental and natural resources issues by maintaining 38 long term data collection/data management efforts and supporting 2 large data infrastructures managed in partnership with others; delivering 840 new systematic analyses and investigations to our customers; improving and developing 4 new decision support systems and predictive tools for decisionmaking; and collaborating with university partners to understand natural systems and facilitate sound management practices through 272 external grants and contracts.

**Performance Measures**

1. **40 Long-term data collection and data management efforts maintained & improved and large data infrastructures supported**

- **2 large-scale infrastructures**:
  National Spatial Data Infrastructure - 65 FGDC-compliant clearinghouse server nodes
  National Biological Information Infrastructure

- **8 long-term geospatial databases**:
  National Hydrographic Dataset - 2,149 cataloging units
  National Elevation Dataset - >53,400 digital elevation models
  National Digital Ortho-Imagery - >86,000 ortho-images
  National Topographic Map Series - ~61,862 primary-series topographic maps
  National Land Cover Characterization Dataset - 149 Landsat Thematic Mapper path/row scenes
  National Aerial Photography Program - >1,400,000 aerial photographs
  National Geographic Names Database - 50 States, District of Columbia, 3 territories, 2 commonwealths, 3 freely associated areas, 2 uninhabited insular areas, and Antarctica
  National Satellite Land Remote Sensing Data Archive - 140,995 gigabytes and 2,162,442 scenes of satellite imagery

- **4 long-term hydrologic data collection and data management efforts**:
  national streamgaging network,
  national network of ground-water monitoring wells,
  water quality monitoring instrumentation at streamgages & wells (includes NASQAN, Benchmark, and NAWQA low-level sampling sites), and National Trends Network for precipitation monitoring.
  Includes some data collection sites funded in part or in whole by State matching funds under the Federal-State Cooperative Water Program, and some sites funded in part or in whole by

reimbursements from other Federal agencies. The streamgaging stations (surface-water monitoring sites) referenced here also include streamgaging stations which contribute to the Hazards annual goal. These stations are multi-purpose, so that any individual station cannot be classified as 100% Hazards or 100% Environment and Natural Resources.

- **7 long-term biological data collection and data management efforts**:
  Bird Banding Laboratory coordination of national bird banding
  Breeding Bird Survey national population monitoring of birds
  Fish population monitoring in Great Lakes and Atlantic and Pacific coasts
  Non-indigenous aquatic species database
  Biomonitoring of Environmental Status and Trends Program (BEST)
  Amphibian monitoring program (includes calling surveys and atlases and web-based North American Reporting Center for Amphibian Malformations)
  Wildlife Disease Epidemiology

- **3 long-term global change data collection and data management efforts**

- **10 long-term coastal and marine geology data collection and data management efforts**

- **1 long-term geologic map information data management effort**:
  National Geologic Map Database FY 1998 baseline, metadata for 45% of all USGS geologic maps and 1% of State Survey geologic maps are accessible via the Internet.

- **5 mineral resources national databases**:
  National Geophysical Database,
  National Geochemical Database,
  Mineral Resources Data System,
  Minerals Availability System/Minerals Inventory Locator System, and
  Automated Minerals Information System.

**2. 865 New systematic analyses & investigations delivered to customers**

- **0 National Mapping Program systematic analyses and investigations**

- **426 Water Resources Investigations** products delivered to managers or the scientific community that result from long-term assessments or from investigations to determine causes and/or effects of environmental change. Reports and other products are delivered as paper copies or Internet products.
  112 National Water Quality Assessment (NAWQA) Program
  70 Toxic Substance Hydrology (includes products resulting from collaboration with the National Research Program)
  3 Ground-Water Resources
  100 Hydrologic Research & Development (includes some products from the National Research Program, which receives funding from other water resources programs and

collaborates on publications and projects with those programs)
141 Fed-State Coop Water Program

- **412 biological research investigations**
  28 Contaminants
  77 Fisheries and Aquatic Resources
  67 Wildlife
  107 Ecosystems
  34 Invasive Species
  65 Endangered and At Risk Species
  34 Biological Information Management and Delivery

- **2 energy resource investigations** as part of a series of periodic assessments on the location, quantity, and quality of known and undiscovered resources from eight regions of the Nation and eight regions of the world

- **3 global change investigations**
  carbon sequestration in lake, reservoirs and peatlands,
  glaciers of South America,
  climate and vegetation change in Western U.S.

- **7 National Cooperative Geologic Mapping investigations**

- **6 regional assessments for coastal and marine natural resources and coastal and offshore environmental issues** (sediment hosted pollutants, coral reefs, benthic habitats, marine sanctuaries, as well as energy, mineral and coastal aquifer resources).

- **5 mineral resources research investigations and assessments** on the occurrence, quality, quantity, uses, and environmental characteristics of mineral resources, fundamental processes that create them, and the life cycle of minerals and mineral materials. Prior to FY 1998, 20 resource or environmental studies were completed.

- **4 integrated ecosystem analyses**:
  Chesapeake groundwater reports and analysis,
  Conowingo Reservoir,
  San Francisco Bay hydrodynamics,
  Water quality database web page

**3. 5 Decision support systems or predictive models developed or improved and delivered to customers**

- **1 National Mapping Program decision support system** — Famine Early Warning System

- **1 new or improved hydrologic model** (2 currently available — Modular Modeling System

and MODFLOW)
1 major model improvement in FY 1998 — an easy-to-use graphical user interface (GUI) was set up for MODFLOW, a three-dimensional ground-water flow model. The GUI enables users to run realistic ground-water simulations, providing immediate visualization of simulation results and giving water managers a better understanding of what the data mean.

- **0 new or improved biological decision support system or predictive model** (7 currently available Florida — Across Trophic Level System Simulation [ATLSS] model; Waterfowl recruitment model; Instream flow models; Upper Mississippi River corridor decision support system; Wetlands expert system [includes Moist Soil Management Advisor and Avian Botulism Risk Assessment Model]; Migratory bird continental population modeling; Regional Hydro-Ecological Simulation System [Glacier NP])

- **1 new or improved geological decision support system or predictive model**
  energy resource decision support system

- **2 new or improved integrated ecosystem decision support systems**
  Chesapeake Spatially referenced regressions on watershed attributes model (regional interpretation of water quality monitoring data);
  Florida website

**4. 270 University-based partnerships for natural system analysis**

- **55 grants are awarded annually to 54 State Water Resources Research Institutes** (the Institute in Guam receives 2 grants because it also serves the Federated States of Micronesia).

- **215 biological research work orders** (coop units)

**5. 212 Stakeholder meetings**

- **24 National Mapping Program stakeholder meetings**
  National States Geographic Information Council
  Annual Cooperator Program Workshop (Central/Eastern Region)
  National Cooperator Program Workshops (ASPRS, ACSM conferences) - 2
  NMD National Mapping Managers Conference
  USGS/USFS Single-Edition Steering Committee - 2
  National Digital Orthophoto Steering Committee - 3
  National Satellite Land Remote Sensing Data Archive Advisory Committee - 2
  National Atlas Federal Steering Committee
  NASA/NOAA/USGS Landsat 7 Program Management Review
  NASA/USGS Partnership Roundtable Review
  Inventory Management/IG Review
  International Map Trade Association Business Partner Program Review
  Land Processes Distributed Active Archive Center Advisory Committee - 2

FGDC Subcommittee on Base Cartographic Data
Interior Geographic Data Committee
United Nations Environment Programme/Global Resources Information Database Advisory - 2
DOI High-Priority Digital Base Data Program Steering Committee

- **24 Geologic Hazards, Resources, and Processes stakeholder meetings**
  16 energy resource meetings
  1 global change
  1 annual meeting of the Advisory Committee chartered by the National Cooperative Geologic Mapping Act
  5 coastal & marine environment
  1 mineral resources stakeholder meetings

- **8 integrated ecosystem stakeholder meetings**:
  Chesapeake Liaison Committee/Client meetings
  Florida Bay Science Symposium
  Mercury Workshop
  Paleo workshop
  Mojave Client meeting
  San Francisco Bay - monitoring program design meetings
  Platte R. Symposium
  Greater Yellowstone Area Grand Teton Workshop

- **87 Water Resources Investigations stakeholder meetings** including one meeting per program for Ground-Water Resources, Toxic Substances Hydrology, and Hydrologic Research & Development, and 2 meetings for Water Information Delivery (5 meetings total). One meeting per State for Fed-State Coop Water Program (50 meetings total). 32 meetings for NAWQA Program (includes one meeting per year for each study unit in the high intensity phase of the study cycle).

- **69 Biological Research stakeholder meetings**
  National:
  38 Coop. Research Unit Management Meetings
  2 Program Reviews
  1 Theme/Issue workshops
  1 National Bureau Information Needs
  Regional:
  5 Regional Bureau Information Needs Meetings
  16 Research Center Partner Coordination Meetings
  2 Individual Bureau Coordination Meetings (National Park Service, Minerals Management Service)
  2 Research Center Reviews
  2 Theme/Issue Workshops